

Analysis of Value Chain Model of Sheep-Fattening Business in Langkat District

ABSTRACT

Aims: Assigned a value chain model for fattening sheep in the study area.

Study design: This research begins with preliminary studies such as conducting literature studies, problem identification, needs analysis, and system identification. Then conduct field observations and expert interviews. Best practice value chain analysis consists of several steps, which are both descriptive and analytical. Value chain analysis describes the overall market in which a particular value chain operates.

Place and Duration of Study: The research was conducted from November 2022-January 2023 in Sei Bingai District, Langkat Regency..

Methodology: The method used in this study is value chain analysis through mapping Hayami's value chain and added value.

Results: The value chain model for fattening sheep in the research area can be applied to improve performance through efficiency, integration of actors, and distribution channels to deliver to consumers. Based on data processing and analysis results, it is known that the problem of sheep value chain management is a constraint on resource input in the form of a shortage of sheep supply, so Langkat Regency still depends on supplies from other regions.

Conclusion: Mapping a value chain model based on actual business processes requires designing a supply chain solution to address critical aspects that hinder the smooth management of the sheep value chain.

Keywords: Langkat Regency, Risk, Sheep Fattening, Value Added, and Value Chain Model.

1. INTRODUCTION

Sheep farmers in Langkat Regency have managed their livestock business well [1]. However, the implementation of production requires more intensive handling. More intensive handling of production and marketing processes is often faced with constraints, among the obstacles faced in producing fattening sheep, namely the level of risk in the production process to marketing. *Risk* is an uncertain situation a person or company faces that can have an adverse impact [2].

This research is essential because the results can be used as information for sheep farmers to improve their performance by applying the designed value chain model. The Value Chain can identify each part of the production process and identify which steps can be eliminated or improved so that it is known in which areas some processes provide the most value added to the performance of fattening sheep companies [3]. Value Chain Analysis (VCA) can also assist companies in identifying areas that can be optimized for maximum efficiency and profitability [4]. If the measurement of the value chain is carried out systematically, this can be a guide to measure the strengths and weaknesses within the company's internal [5]. Optimal thorough processing of various company activities in a value chain will create an

32 advantage over those that stand alone [6]. This condition will ultimately encourage the
33 creation of maximum profit margins. For the government, the results of this study are
34 expected to be helpful for the local and regional governments to be used as a reference in
35 efforts to increase the competitiveness of sheep farmers.

36 Based on this description, the research results on the added value received between
37 farmers and other link actors in the fattening sheep value chain still provide different
38 conclusions. There needs to be more empirical research that examines the fattening sheep
39 value chain. Therefore, research is necessary to develop a value chain model for fattening
40 sheep in Langkat Regency. This study aimed to design a value chain model for fattening
41 sheep and identify which activities have the highest economic value added to fattening
42 sheep in the study area.

43 **2. METHODOLOGY**

44 **Research Approach**

46 This research begins with preliminary studies such as conducting literature studies, problem
47 identification, needs analysis, and system identification. Then conduct field observations and
48 expert interviews. Best practice value chain analysis consists of many steps, which are both
49 descriptive and analytical. Value chain analysis usually describes the overall market in which
50 a particular value chain operates.

51 The descriptive analysis describes the value chain itself. This involves considering who is
52 involved and describing the work, income, profits, and value of the unit's product for those
53 involved in the value chain. The analytical step then involves assessing/benchmarking the
54 performance of the value chain, both to take into account changes over time and potentially
55 also to compare with international competitors. This analysis should also be conducted to
56 assess the critical challenges and factors impacting value added through the chain. Finally,
57 these descriptive and analytical steps can be used to recommend solutions to critical
58 challenges and to define implementation plans to deliver value chain improvements.

59 The value chain studied starts from cultivation activities and processing in the upstream
60 industry to the downstream industry. Primary raw materials are raw or semi-finished
61 materials that other industries produce [7].

62 **Location and Time of Research**

63 This research will be carried out from November 2022 to January 2023 in Sei Bingai District,
64 Langkat Regency, because this area is one of the areas with great potential in developing a
65 sheep farming business.

66 **Variable Operational Parameters**

67 The parameters observed in this study were the structure of the value chain and added
68 value in the fattening sheep business in Langkat Regency. The indicators used in this study
69 are based on existing literature and adapted to the conditions and circumstances in the field.
70 The variables are Main Activities, which consist of Inbound Logistics, Operations, Outbound
71 Logistics, Marketing, and Sales; Supporting Activities consisting of Firm Infrastructure,
72 Human Resources Management, Technology Development, and Procurement.

73 **Population and Sample**

74 The population in this study were all sheep farmers in Langkat Regency. In this study,
 75 sampling was carried out by census or as a whole. The census method is also known as the
 76 complete enumeration method, in which all individuals are investigated or interviewed as
 77 respondents [8].

78 **Data collection technique**

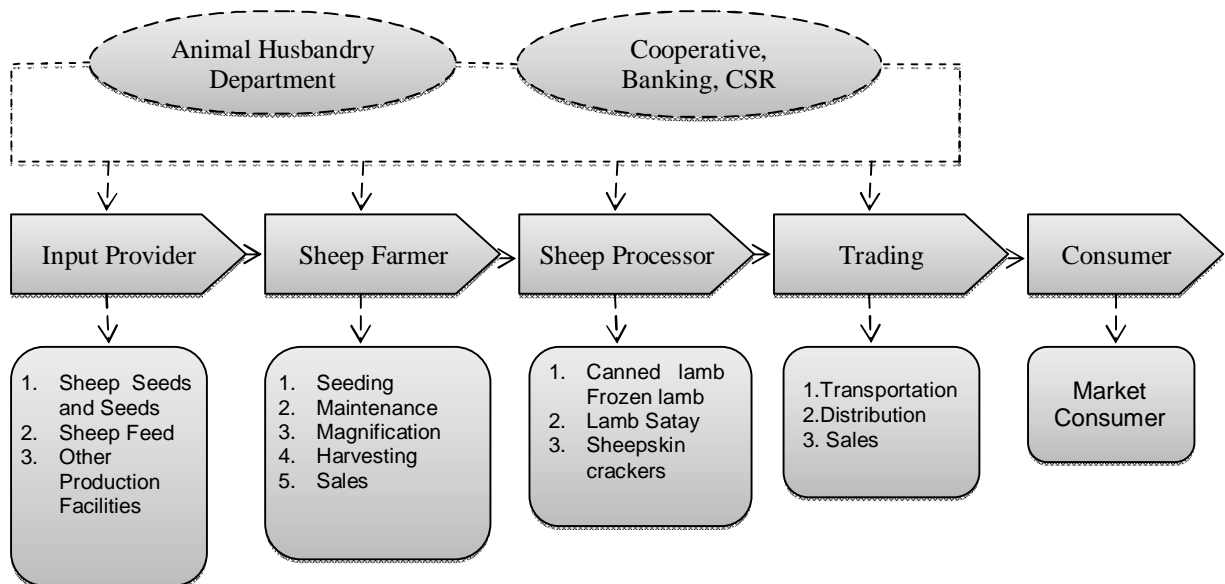
79 Data collection activities include several techniques, namely semi-structured interviews,
 80 document analysis, informal discussions, and direct observation [9]. The interviews involved
 81 decision-makers and experts responsible for the fattening sheep system in Langkat District.
 82 [10]. The interviewees were selected for their direct involvement in critical sheep-fattening
 83 industry value chain activities in designing, implementing, and controlling several projects
 84 and evaluating the business's sustainability. This data collection technique is considered
 85 appropriate for investigating the value chain of the sheep-fattening industry.

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87 **3. RESULTS AND DISCUSSION**

88 **3.1. Actors Involved and Activities in the Value Chain**

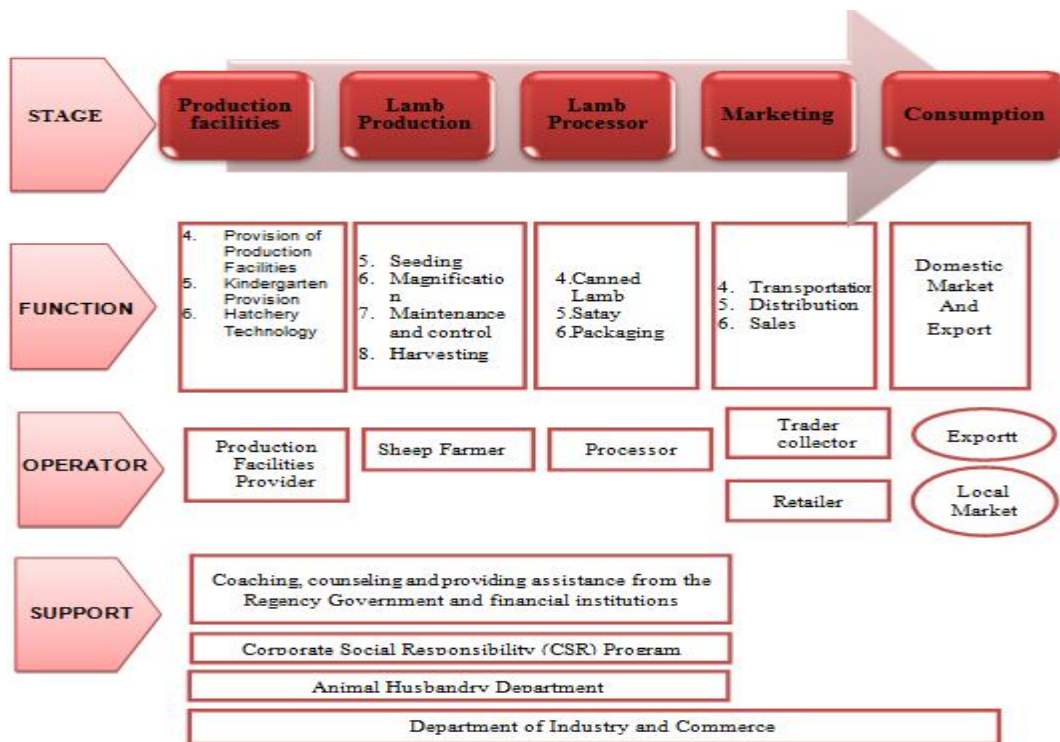
89 The first step is to identify which stakeholders are involved in the value chain of the sheep
 90 processing industry. Perpetrators were identified through direct observation and interviews
 91 with related agencies, farmers, community leaders, experts, traders, and sheep managers.
 92 The actors and institutions involved in the sheep value chain can be seen in Figure 1.



93

94 **Figure 1. Actors and Institutions involved in the Sheep Value Chain in Langkat District**

95 The activities carried out by the actors/actors involved in the sheep commodity value chain
 96 have a coordinated relationship and need each other. Therefore, value chain activities in the
 97 value chain commodity business involve not only the main activities but also supporting
 98 activities that are directly or indirectly involved. The actors involved include input supply
 99 providers, cultivators, fish processors, collectors, consumer retailers, and
 100 agencies/institutions related to the sheep commodity business in No



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Figure 2. Value Chain of Sheep Fattening Business in Langkat District

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The Livestock Service Office and the Industry and Trade Service indirectly support these stages. For more details on the actors involved in the sheep processing value chain, see Table 1.

Table 1. Roles and Actors Involved in the Sustainable Sheep Processing Value Chain

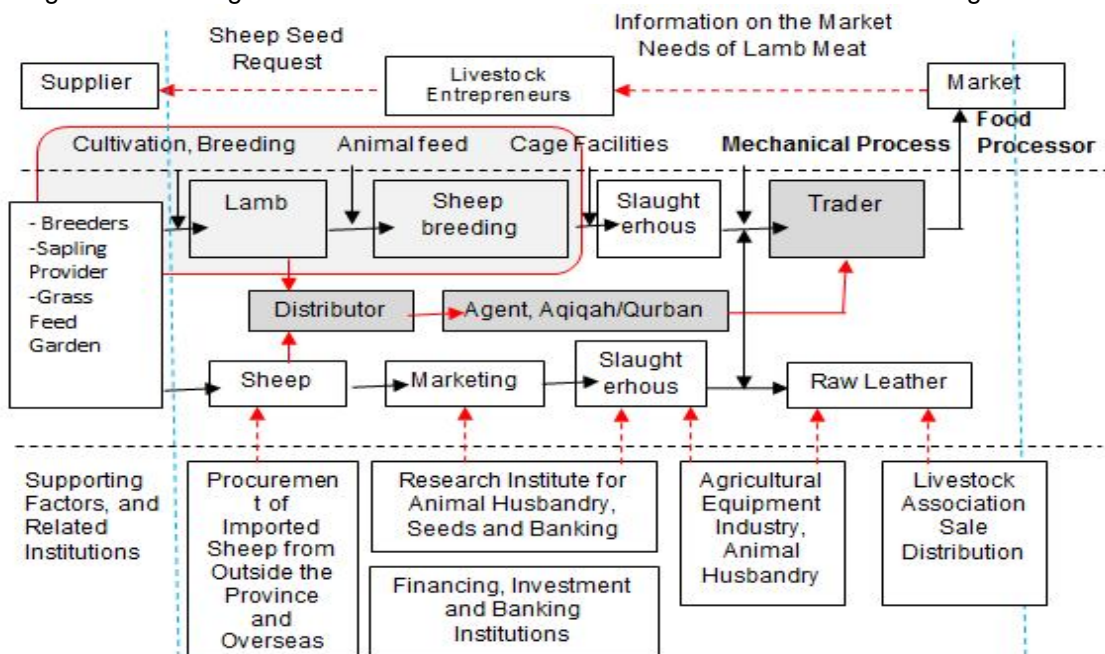
No.	Actors	Role
1.	Sheep Farmer	Play a role in sheep production, which is carried out in such a way that it can take place sustainably at a reasonable level by taking into account ecological health, minimizing side effects that disrupt diversity, ecosystem structure, and function, and managing and carried out fairly and responsibly, by-laws and regulations locally, nationally and internationally to meet the needs of present and future generations.
2.	Sheep Breeding Group	It is a forum for cooperation between sheep breeders and other parties so that they can face various challenges and problems and have a good bargaining position to achieve sustainable sheep fattening development.
4.	Traders and exporters	Playing a role in the sustainable distribution (marketing) of sheep with increasing export values and high selling prices.
5.	Supporting Actor	
	a. Financial institutions,	As the access to capital for the development of fattening sheep business

	b. Agency for the Assessment and Application of Technology	Play a role in the application of sustainable sheep-fattening resource management technology to help improve the management of fattening sheep resources
	c. Certification bodies, both international and national.	Act as guarantor for aquaculture sheep fattening products to fulfill food safety, fish health, welfare, and socio-economic and environmental responsibility.

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109 3.2. VALUE CHAIN MODEL DESIGN IN SHEEP-FATTENING BUSINESS

110 A supply chain mapping was prepared based on the business process analysis approach
 111 and discussion of the case for developing a fattening sheep business and the development
 112 of porter's value chain. This mapping method is mutually supportive and complementary to
 113 detail further the flow of activities in the chain of actors for all related parties. The supply
 114 chain has advantages in terms of an integration strategy for all stakeholders in all supply
 115 chain lines from upstream to downstream, thereby increasing the efficiency and
 116 effectiveness of industrial systems. The value chain model of the sheep-fattening business
 117 through the integration of business actors can be seen in figure 3.



118

119 **Figure 3. Value Chain Model of Sheep-Fattening Business Through Integration of**
 120 **Business Actors**

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122 The sheep fattening Value Chain Model and related positions and business actors are as
 123 follows.

- 124 1. Focus as a breeder in the blue block - Sheep Breeding Cultivation Unit, Maintenance,
 125 Development, and Support of the animal feed industry.
- 126 2. Position in channel distribution: backward farming land, cooperation with sheep
 127 breeders ← Sheep Farming → Market Research, cooperation with traders, and easy
 128 access to distribution of goods to consumers.

129 3. Main core: Procurement of sheep seeds and maintenance of sheep fattening.
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131 Mapping the flow of business processes in the value chain management method helps
132 facilitate the discussion of problems by reviewing the roles of each related party.
133 Understanding problem mapping in support of value chain management flow facilitates
134 identification and orientation to address problems according to the relationship between
135 parts of a business unit. The results of mapping the sheep value chain model can be
136 applied to improve performance through efficiency, integration of actors, and distribution
137 channels to deliver to consumers. Based on data processing and analysis results, it is
138 known that the problem of sheep value chain management is a resource input constraint in
139 the form of a shortage of sheep supply. Hence, the Langkat Regency still depends on
140 supplies from other regions.

141 **4. CONCLUSION**

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143 The value chain model for fattening sheep in the study area can be applied to improve
144 performance through efficiency, integration of actors, and distribution channels to deliver to
145 consumers. Based on data processing and analysis results, it is known that the problem of
146 sheep value chain management is the existence of resource input constraints in the form of
147 a shortage of sheep supply so that Langkat Regency still depends on supplies from other
148 regions..

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154 155 **COMPETING INTERESTS**

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157 Authors have declared that no competing interests exist.
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159 160 **AUTHORS' CONTRIBUTIONS**

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162 This work was carried out in collaboration between all authors. Julia Marisa designed the
163 study, performed the statistical analysis, wrote the protocol and wrote the first draft of the
164 manuscript. Sukma Aditya Sitepu managed the analyses of the study. Aditiya Amanda
165 Rianto managed the literature searches. All authors read and approved the final manuscript
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